A1 contd

having a proximal end portion and a distal end portion, with the θ motion being about a primary axis at the proximal end portion of a proximalmost of the links, the R motion proceeding radially from the primary axis, comprising:

a first end effector pivotally mounted for rotation relative to the distal end portion of a distalmost link about an end effector axis which is parallel to the primary axis;

a first motor connected to rotate the first end effector about the end effector axis so as to provide an independent yaw (Y) motion for the first end effector;

a second end effector pivotally mounted for rotation relative to the distal end portion of the distalmost link about the end effector axis;

a second motor connected to the second end effector about the end effector axis so as to provide an independent yaw (Y) motion for the second end effector independent from the yaw motion of the first end effector;

an elevator structure movable along a Z axis, the robotic arm structure being supported by the elevator structure; and

means for controllably tilting the elevator structure with respect to the Z axis.

Add new Claims 8-16 as follows:

A2 contd

8. (New) The robotic arm structure of Claim 1, wherein the arm structure is adapted to operate automatically and independently of real-time operator input.

9. A robotic arm structure providing θ- and R-motion which includes at least two links, each having a proximal end portion and a distal end portion, with the θ motion being about a primary axis at the proximal end portion of a proximalmost of the links, the R motion proceeding radially from the primary axis, comprising:

a first end effector pivotally mounted for rotation relative to the distal end portion of a distalmost link about an end effector axis which is parallel to the primary axis;

a first motor connected to rotate the first end effector about the end effector axis so as to provide an independent yaw (Y) motion for the first end effector;

a second end effector pivotally mounted for rotation relative to the distal end portion of the distalmost link about the end effector axis;

a second motor connected to the second end effector about the end effector axis so as to provide an independent yaw (Y) motion for the second end effector independent from the yaw motion of the first end effector,

wherein the robotic arm structure is adapted to operate in a semiconductor processing environment.

10. (New) The robotic arm structure of Claim 9, wherein the arm structure is adapted to operate automatically and independently of real-time operator input.

11. The robotic arm structure of Claim 9 wherein the first motor and second motor are mounted on the distal end portion of the distalmost link.

12. The robotic arm structure of Claim 9 wherein the first motor and second motor are mounted adjacent the proximal end portion of the distalmost link.

A2 cont'd

13. The robotic arm structure of Claim 9 wherein the first motor and second motor are mounted within an intermediate link.

14. The robotic arm structure of Claim 9, further comprising:

an elevator structure moveable along a Z axis, the robotic arm structure being supported by the elevator.

15. The robotic arm structure of Claim 14, further comprising:

means for controllably tilting the elevator structure with respect to the Z axis.

16. The robotic arm structure of Claim 9, further comprising:

means for controllably tilting the robotic arm structure with respect to a Z axis.

REMARKS

The Office Action dated May 19, 1999 has been carefully considered. In response to the Office Action, applicants have amended the application. Applicants request that the Examiner consider the following remarks, and then pass the application to allowance.